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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/005,613	10/26/2001	Steven R. Walther	V0077/7167WRM	9731

7590

02/04/2004

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EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 02/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AC

Office Action Summary

Application No.

10/005,613

Applicant(s)

WALTHER ET AL.

Examiner

Rodney G. McDonald

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 14-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8-8-03.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

This application contains claims 14-25 drawn to an invention nonelected with traverse in Paper No.3. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321 may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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2. Claims 1-13 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-22 and 28-33 of copending Application No. 10/007,530 in view of Liebert et al. (U.S. Pat. 6,020,592), Goeckner et al. (U.S. Pat. 6,182,604), Miyake et al. (U.S. Pat. 6,165,367) and Denholm et al. (U.S. Pat. 5,911,832).

This is a provisional obviousness-type double patenting rejection.

Application No. 10/007,530 teach a process chamber for enclosing a plasma doping chamber. The process chamber can be coupled to a first pump while the plasma doping chamber is coupled to a second pump. A workpiece platen is movable to establish a plasma doping environment and allows communication between the plasma doping chamber and the process chamber in a second mode. (See claims)

The difference between Application No. 10/007,530 and the present claims is that a chamber that is pulsed for plasma doping is not discussed, a hollow electrode surrounding the space between the anode and platen and being electrically connected to the anode is not discussed (As applies to claims 7 and 8), negative ions for implantation are not discussed (As applies to claim 11) and the platen being ground is not discussed (As applies to claim 12).

Liebert et al. teach a plasma doping apparatus which includes a plasma doping chamber, platen mounted in the plasma doping chamber for supporting a workpiece, a source of ionizable gas is coupled to the chamber, an anode spaced from the platen and a pulse source for applying high voltage pulses between the platen and the anode. The high voltage pulses produce a plasma sheath in the vicinity of the workpiece. The

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high voltage pulses accelerate positive ions across the plasma sheath toward the platen for implantation into the workpiece. (See Abstract)

Figure 1 shows a plasma doping chamber 10 defining an enclosed volume 12. A platen 14 positioned within chamber 10 provides a surface for holding a workpiece. The platen 14 supports wafer 20 and provides an electrical connection to the wafer 20.

(Column 4 lines 32-39)

An anode 24 is positioned within chamber 10 in spaced relation to platen 14. Anode 24 may be moveable in a direction indicated by arrow 26, perpendicular to platen 14. The anode 24 is typically connected to electrically-conductive walls of chamber 10, both of which may be connected to ground. (Column 4 lines 44-49)

The wafer 20 and the anode 24 are connected to a high voltage pulse generator 30, so that wafer 20 functions as a cathode. (Column 4 lines 50-53)

The enclosed volume 12 of chamber 10 is coupled through a controllable valve 32 to a vacuum pump 34. A gas source 36 is coupled through a mass flow controller 38 to chamber 10. (Column 4 lines 58-61)

As known in the art, the plasma 40 contains positive ions of the ionizable gas from gas source 36. The plasma 40 further includes a plasma sheath 42 in the vicinity of platen 14. The electric field that is present between anode 24 and platen 14 during the high voltage pulse accelerates positive ions from plasma 40 across plasma sheath 42 toward platen 14. The accelerated ions are implanted into wafer 20 to form regions of impurity material. The pulse voltage is selected to implant the positive ions to a desired depth in wafer 20. (Column 5 lines 19-28)

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The motivation for utilizing pulsed plasma doping is that it allows for implantation into a substrate. (Column 1 lines 5-10)

Goeckner teach a plasma doping apparatus includes a hollow cathode to increase throughput and uniformity of ion implantations in a target. The hollow cathode is located adjacent an anode and a target cathode on which a target is placed. An ionizable gas is provided in a space between the anode and the target cathode. The space in which the ionizable gas is provided is surrounded by the hollow cathode. The hollow cathode has either a circular or rectangular cross-section. (See Abstract) The elements are electrically connected through the plasma.

The motivation for utilizing a hollow electrode surrounding the space between the anode and platen is that it allows for increasing throughput and uniformity of ion implantation. (See Abstract)

Miyake et al. Teach pulsing and implanting negative ions into a substrate. (Column 3 lines 19-26)

The motivation for implanting negative ions is that it allows for preventing damage to the workpiece even if there is an insulating portion. (Column 2 lines 25-31)

Denholm et al. teach in Figure grounding the substrate holder and applying pulses to the anode so that gas molecules are ionized to be implanted. (See Figure 1; Abstract)

The motivation for grounding the workpiece for implantation of ions is that it allows for facilitating the mechanical scanning of workpieces. (Column 3 lines 22-25)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified 10/007,530 by is pulsing for plasma doping as taught by Liebert et al, to have utilized a hollow electrode surrounding the space between the anode and platen and being electrically connected to the anode as taught by Goeckner et al., to have utilized negative ions for implantation as taught by Miyake et al. and to have utilized a grounded platen as taught by Denholm et al. because it allows for implantation with uniformity, low damage and mechanical scanning.

Response to Arguments

Applicant's arguments filed October 10, 2003 have been fully considered but they are not persuasive.

RESPONSE TO THE ARGUMENTS:

In response to the argument that the claimed controller is not suggested by the references it is argued that the claims of Serial No. 10/007,530 teach a controller which moves the platen between a process chamber which has a beamline implant and a plasma doping module which includes a plasma doping chamber. The plasma doping chamber is located in the process chamber. The platen can be moved into a sealed engagement with the plasma doping chamber thus separating the platen from the main process chamber and the beam line implant. Thus the claims of 10/007,530 do suggest the controller for moving a platen between the process chamber and a plasma doping chamber located in the process chamber. (See Claims of 10/007,530)

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th from 8 to 5:30. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen, can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

RM

January 29, 2003



RODNEY G. MCDONALD
PRIMARY EXAMINER